Contribution Tracing Summary

Contribution Tracing is an innovative theory-based approach to Monitoring and Evaluation (M&E) Questioning the linear and confined logic of attribution in development evaluation, it emerged in response for the increasing need expressed by development agencies to make a plausible claim for how they have *contributed* to an observable outcome.[1]

Contribution Tracing combines quantitative and qualitative methods from Process Tracing and Bayesian (Confidence) Updating in order to formulate and validate a "contribution claim" about the role played by an actor's intervention (or parts of it) in achieving a particular outcome. The key advantage of this approach over other theory-based approaches such as contribution analysis or outcome harvesting, is its emphasis on "probative-value" – whether a particular item of evidence helps to strengthen, or weaken, an evaluator's confidence in a specific contribution claim.

Narrowing the focus of monitoring and evaluation is often a great challenge for development agencies because assumptions are not regularly interrogated, and thus pathways within a particular theory of change (ToC) are often unclear and rely on leaps of faith about how change happened. A By design, Contribution Tracing approach offers more *targeted* and efficient guidance on what data is most *useful* for the outcome an evaluator is trying to assess.

Contribution Tracing uses various methods (and tests) from Process Tracing in order to assess the usefulness of evidence. Process Tracing is a method for qualitative analysis which aims to trace causal mechanisms and make inferences about contributing factors within a particular change process (see Collier, 2011). It recognizes that causality in social and political action is complex and rarely reducible to single factors, and the sequence of this change is often non-linear. The focus is not on quantifying net change attributable to a specific intervention, but rather on assessing the confidence that an actor's intervention has (or has not) contributed to causing a change.

When using Process Tracing, evaluators aim to establish what evidence can help to prove or refute the hypothesis of a particular "contribution claim." Causal mechanisms are often expressed as theories of change or logic models. They are composed of a series of inter-related components. Each component consists of an actor (or "entity") engaging in a specific activity or behaviour – i.e. *CARE carried out a specific set of activities, and these are a component of a process towards a particular outcome*. The mechanism is thus the combination of actions (activities and behaviours) of key actors that together help to explain the change. The evaluator's role is to verify the existence of the causal mechanism by collecting evidence that each component (entity and activity/behaviour) exists (Beach and Pederson, 2013). What matters in Process Tracing is not the size of the sample or how representative this is, but on the quality of evidence (i.e. "probative value") within a specific context

Box 1: Process Tracing Tests

Straw-in-the-Wind Test
(neither confirmatory, nor disconfirmatory): if the evidence is observed, this is not sufficient to confirm the contribution claim. If the evidence is not observed, this is not sufficient to reject the contribution claim.

Hoop Test
(disconfirmatory): if the evidence is not observed, the contribution claim is rejected. If the evidence is observed, the contribution claim is not rejected (it passes through the hoop); but it is not confirmed either.

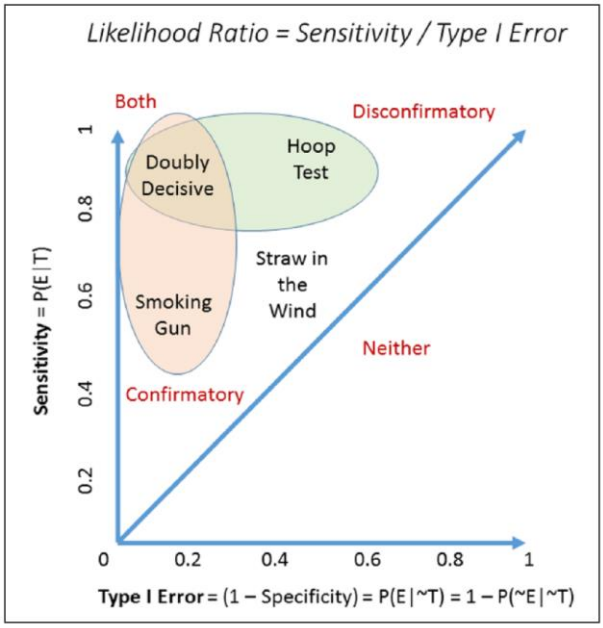
Smoking Gun Test
(confirmatory): If the evidence is observed, the contribution claim is confirmed. If the evidence is not observed, the contribution claim is not confirmed; but it is not rejected either.

Doubly-Decisive Test
(both confirmatory and disconfirmatory): If the evidence is observed, the contribution claim is confirmed. If the evidence is not observed, the contribution claim is rejected.

[1] This summary was written by Tom Aston, but draws heavily on Befani and Stedman-Bryce (2016)

and the likelihood that a particular explanation is true – the probability of making such an observation (Befani and Mayne, 2014). Process Tracing makes use of four metaphors to explain the ways in which items of evidence can alter our confidence: the Straw-in-the-Wind Test; the Hoop Test; the Smoking Gun Test; and the Doubly Decisive Test (Bennett, 2008). See Box 1 above for their characteristics.

In Contribution Tracing, these tests are combined with a mathematical formula, the process known as Bayesian Updating to quantify the probative value of causal claims. This formalises Process Tracing tests through the application of a rigorous mathematical procedure. The aim is to test the difference between the true positive rate, or 'Sensitivity', and the false positive rate, or 'Type I Error'. In Contribution Tracing, Sensitivity is the probability of observing an item of evidence if the contribution claim is true. Type I Error is the probability of observing an item of evidence if the contribution claim is *not* true. The larger the difference between the Sensitivity and the Type I Error, the higher the probative value of an item of evidence in relation to a specific contribution claim. This is represented in Figure 1 where P=Probability, E=Evidence and T=Contribution Claim.



Adapted from Humphreys and Jacobs, 2015

If we are more likely to observe an item of evidence if the contribution claim is true (Sensitivity), than if the contribution claim is not true (Type I Error), then this evidence increases our confidence in the claim. Conversely, if we are more likely to observe an item of evidence if the contribution claim is not true (Type I Error), then this evidence weakens our confidence in the claim. And if the item of evidence is just as likely to be observed if the claim is true or false, then this evidence does not alter our confidence in the claim.

Befani and Stedman-Bryce (2016) have adapted qualitative rubrics to translate these probabilities into a narrative form. See Table 2 below. Essentially, evaluators start with a confidence level of 0.5 (no information) and search for evidence that helps to increase their level of confidence.

Table 2: Qualitative Rubrics for Levels of Confidence

QUALITATIVE STATEMENT	RANGE OF PROBABILITIES
Practical Certainty	0.99+
Reasonable Certainty	0.95–0.99
High Confidence	0.85–0.95
Cautious Confidence	0.70–0.85
More Confident than not	0.50–0.70
No information	0.50